

BOOK REVIEWS.

East, Edward M., Professor in Harvard University. *Mankind at the Crossroads*. New York and London, Charles Scribner's Sons. 1923. Pp. 352. With maps and illustrations. Price 16s. net.

To those optimistic dreamers who are even now looking forward to the advent of the millennium to be ushered in by the application of one or other of the fashionable political nostrums, Professor East's book will come with the effect of a cold douche. The coming events whose premonitory shadows the author maps out with such convincing exactness are those which politicians prefer to ignore, if, indeed they are conscious of their approach; and the public at large, whose attention is occupied by the local and trivial activities of the directors of social policy, are equally oblivious of these great, fundamental and vital realities.

Professor East's interests have at various times covered a wide area and embraced a variety of subjects, ranging from food chemistry, soil chemistry and agricultural economics to genetics and human heredity. Latterly these apparently unrelated subjects have been brought by him under a joint consideration whereby each has developed a very evident bearing on the others. Thus correlated, they have appeared as a coherent group yielding, on comparison, certain definite conclusions. "And from their consideration, a startling truth emerged. The facts of population growth and the facts of agricultural economics pointed severally to the definite conclusion that the world confronts the fulfilment of the Malthusian prediction here and now. Man stands to-day at the parting of the ways, with the choice of controlling his own destiny or of being tossed about until the end of time by the blind forces of the environment in which he finds himself."

The note of warning thus sounded is not the first of its kind. By numerous observers the alarming growth of population has been pointed out and commented on; and in connection with it, the enormous and wasteful consumption of the material resources of the world has been noted. But the special importance and value of Professor East's work consists in the fact that it attacks the problem quantitatively, and that at both ends. Not only does it present exactly and in full detail the facts relating to the number of human beings inhabiting the earth and its various regions, with their rate of increase; it enters with the same exactness into the question of the available accommodation in terms of food and land area, and correlates these two groups of facts. The picture is thus very complete. To each individual unit of the population there appertains a certain minimum space as the indispensable food supply. Consideration of the total area available, of the proportion of that area already fully occupied, and of the unoccupied remainder, together with the present population and the rate of natural

increase, renders possible an estimate of very respectable accuracy of the time that it will take to fill the world to its utmost capacity.

This question—the World Situation in Population and the Food Supply—which is the central theme of the book, is dealt with exhaustively in the long chapter (IV) of that title. Full of interest as it is and of an importance that would be difficult to exaggerate, we can here glance at it only briefly. First, with reference to the population, it is noted that the increase in the past has been so slow that in the half-a-million years ending in the year 1800 the entire human race numbered no more than 850 million people. “Since that time, a short hundred years, the population has more than doubled. Half a million years, let us say, to reach a population of 850 millions. Half a million and 100 years to reach a population of more than 1,700 millions.” The annual increase Professor East estimates at about 12 millions. “In other words, there are almost two new Belgiums to feed just now with each additional year.” Or stating the increase in terms of food “the farmer must provide the world with some 23,000 million pounds of food-stuffs more than they ever provided before if the people are to be fed. Translating these figures into land requirements is still more staggering. On the average it takes from two to three acres to support a man. Thus every season the tillers of the soil must prepare, plant, cultivate and harvest nearly forty million acres more than they did the year before. . . .”

The author then proceeds to forecast the condition of the world if the current rate of growth of the population should be maintained; a rate which, according to Knibbs, doubles the population every 60 years. Taking as a maximum one person for each 2.5 acres on 40 per cent. of the land area of the globe, “Under the most optimistic assumptions as to production and distribution of food . . . the world can support but 5,200 millions of people; and these people must content themselves with the limited dietary and the few material necessities which form the current standards among the peasantry of Europe. Furthermore, if the present rate of increase could continue unabated, babies now alive would live to see this event come to pass. The world would be filled with people without faith or hope, a seething mass of discontented humanity struggling for mere existence, within the span of a single lifetime.”

These conclusions are based upon data which are quoted and examined with convincing thoroughness; and when he has exposed the delusions of the rain-makers and creators of artificial food materials and taken “the props from beneath the air castles of those credulous day-dreamers who expect all future troubles to be straightened out by the genius of the test-tube shaker,” Professor East leaves us with a picture of the relatively near future which is of profound interest not only to the economist but also to the eugenist. It is the picture of an overpopulated world in which all activities would have to be subordinated to the paramount necessity of extracting the last ounce of nutriment from the rapidly contracting land area. In such a world, the vast industrial system of the present could have no place. No great industrial areas could exist when every agricultural area was filled with a teeming population which consumed the whole of its pro-

duce. No country could exist as the "workshop of the world" when there was no other country with surplus food to export. The wonderful advances of the last 150 years in mechanism, in chemistry, in electricity, would lose a large part of their significance; the triumphs of mass production and transport would cease to have any utility. For the one thing that they do not produce is food. Nor, in a world in which intensive cultivation of the land was the condition of bare existence could human effort be spared for any other occupation. The threat of impending starvation would drive the entire population back to the land, the ultimate source of food.

To the eugenicist this picture of a poverty-stricken world has a profound, if rather melancholy, interest. With the whole of mankind pressed hard against the limits of bare subsistence, the age-long suspension of natural selection would come to an end. When each man, by strenuous toil from dawn to dusk, could but squeeze from the reluctant soil the means of staving off starvation, those artificial aids, by which the defective are at present enabled to live and breed, would be things of the past. No work-shy or incompetent, no feeble-minded or feeble-bodied parasites would subsist on the earnings of the hard-pressed worker, slaving under the urge of impending famine. To the strong, the resolute, the untiring, the provident, the overtaxed earth would still yield her gifts, if with a grudging hand; enough for bare support, but with no margin for charity. The "right to live" would be interpreted in the ancient way; and if a man would not work, neither should he eat.

But it is a sorry picture. Is it for this, we ask ourselves, that man was made a little lower than the angels? Is this the goal towards which mankind has been marching for half a million years? Has the human race lived its long life, made glorious by splendid achievement, only to end at last a squalid herd of hungry wretches struggling and contesting for the bare means of keeping themselves alive? It seems incredible; and when we bear in mind that the disaster is still avoidable, we are moved to hope that men may be roused from their lethargy, if only at the eleventh hour, to adopt the ready means at their disposal for the salvation of the race.

Professor East is, in fact, not pessimistic. He looks to the rigorous struggle for existence to exterminate the parasitic sub-men who are the main source of the monstrous increase. "Parasites" he observes, cheerfully, "must have hosts, or they perish"—ignoring the frequency with which, in nature, the parasites perish only when they have killed the host. Still, he is unquestionably right in so far that a hard struggle for existence would re-establish the process of natural selection; but one would wish to see the mischief arrested at an earlier stage.

His remedy, it is needless to say, is the obvious and only one. Since the earth cannot be enlarged, the population must be so restricted as to be containable within the available space. "The first requisite for the convalescence of the sick old world, is restricted population. With it mankind may show a progressive evolution of body, mind and soul; without it the door is shut." As to the means, Professor East is a whole-hearted advocate of contraceptive methods (including

sterilization in appropriate cases). "Happily" he says "the twentieth century has at its disposal methods of birth control unobjectionable either from the standpoint of ethics or of physiology." But he makes it very clear that these measures must be adopted with discrimination and with a view to the elimination of the unfit. "Social progress requires better breeding . . . the contributions which occasion this increase come disproportionately from the least desirable elements. The remedy proposed is to promote birth-control at the lower end of the social scale."

In this connection Professor East notes what some observers have failed to appreciate; that the great social menace comes from the sub-men rather than from the recognized and certifiable mental defectives. The improvement of the race, he affirms, is to be sought "by decreasing the proportion of the so-called normals who appear in huge numbers just above the institutional line and who reproduce at least twice as rapidly as those at the other end of the scale of intelligence." It will thus be seen that he is in complete agreement—in much more complete agreement in fact than he seems to think—with current eugenic opinion. To the importance of promoting birth-control in the classes characterized by the lowest intelligence, all eugenists will assent; and they will probably wish that the value of the remedy were not so much more obvious than the available means of applying it.

In the above comments only the central theme of the book has been noticed—the tendency of the growing population to overtake the food-supply. But every one of the twelve chapters will interest and inform the student of social science. It is a valuable and important book; and its value is enhanced by the author's power of holding the reader's attention. The style is lucid, vigorous and persuasive; exact enough to satisfy the student, familiar and pleasant enough to render it acceptable to the intelligent layman.

R. AUSTIN FREEMAN.

Haldane, J. B.S. (*Daedalus, or Science and the Future*. A Paper read to the Heretics, Cambridge, on Feb. 4th, 1923. London, Kegan Paul, Trench, Trubner & Co. 1924. Pp. vii, 93. 2s. 6d. net.

ALTHOUGH this very brilliant lecture professes to have been delivered before a Society of 'Heretics' in a university in which a university teacher can say truly (or at any rate without a blush!) that it is his "whole business to induce people to think," it is an historical fact that it was excogitated soon after Mr. Haldane's return from the wars to an *alma mater* in which no heretics are known to exist, and in which the primary function of the university teacher is to teach that everything worth thinking has been thought of long ago. However those who had the pleasure of hearing Mr. Haldane's paper at any of the various literary Societies which were entertained with it at Oxford, will be delighted that he has published it at last, and proud to think that it was engendered in their midst, though it has no doubt received some 'ectogenetic' incubation in the more nutritious *milieu* of the sister university.